

SEQUENCE LISTING

<110> Luche, Ralf M.
Wei, Bo

<120> DSP-15 DUAL-SPECIFICITY PHOSPHATASE

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<140> US

<141> 2001-09-18

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<212> DNA

<213> Homo sapiens

<400> 1

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<210> 2
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<400> 2

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		20					25						30		
Gln	Arg	Arg	Gln	Ser	Phe	Ala	Val	Leu	Arg	Gly	Ala	Val	Leu	Gly	Leu
	35					40						45			
Gln	Asp	Gly	Gly	Asp	Asn	Asp	Asp	Ala	Ala	Glu	Ala	Ser	Ser	Glu	Pro
50					55					60					
Thr	Glu	Lys	Ala	Pro	Ser	Glu	Glu	Glu	Leu	His	Gly	Asp	Gln	Thr	Asp
65					70					75				80	
Phe	Gly	Gln	Gly	Ser	Gln	Ser	Pro	Gln	Lys	Gln	Glu	Glu	Gln	Arg	Gln
			85					90						95	
His	Leu	His	Leu	Met	Val	Gln	Leu	Leu	Arg	Pro	Gln	Asp	Asp	Ile	Arg
			100					105					110		
Leu	Ala	Ala	Gln	Leu	Glu	Ala	Pro	Arg	Pro	Pro	Arg	Leu	Arg	Tyr	Leu
		115				120						125			
Leu	Val	Val	Ser	Thr	Arg	Glu	Gly	Glu	Gly	Leu	Ser	Gln	Asp	Glu	Thr
130						135						140			
Val	Leu	Leu	Gly	Val	Asp	Phe	Pro	Asp	Ser	Ser	Ser	Pro	Ser	Cys	Thr
145					150					155					160
Leu	Gly	Leu	Val	Leu	Pro	Leu	Trp	Ser	Asp	Thr	Gln	Val	Tyr	Leu	Asp
			165					170						175	
Gly	Asp	Gly	Gly	Phe	Ser	Val	Thr	Ser	Gly	Gly	Gln	Ser	Arg	Ile	Phe
		180						185					190		
Lys	Pro	Ile	Ser	Ile	Gln	Thr	Met	Trp	Ala	Thr	Leu	Gln	Val	Leu	His
		195					200					205			
Gln	Ala	Cys	Glu	Ala	Ala	Leu	Gly	Ser	Gly	Leu	Val	Pro	Gly	Gly	Ser
210					215						220				
Ala	Leu	Thr	Trp	Ala	Ser	His	Tyr	Gln	Glu	Arg	Leu	Asn	Ser	Glu	Gln
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Ser	Cys	Leu	Asn	Glu	Trp	Thr	Ala	Met	Ala	Asp	Leu	Glu	Ser	Leu	Arg
			245					250						255	
Pro	Pro	Ser	Ala	Glu	Pro	Gly	Gly	Ser	Ser	Glu	Gln	Glu	Gln	Met	Glu
		260					265						270		
Gln	Ala	Ile	Arg	Ala	Glu	Leu	Trp	Lys	Val	Leu	Asp	Val	Ser	Asp	Leu
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Glu	Ser	Val	Thr	Ser	Lys	Glu	Ile	Arg	Gln	Ala	Leu	Glu	Leu	Arg	Leu
290					295						300				
Gly	Leu	Pro	Leu	Gln	Gln	Tyr	Arg	Asp	Phe	Ile	Asp	Asn	Gln	Met	Leu
305					310					315					320
Leu	Leu	Val	Ala	Gln	Arg	Asp	Arg	Ala	Ser	Arg	Ile	Phe	Pro	His	Leu
			325					330						335	
Tyr	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ala	Asn	Leu	Glu	Glu	Leu	Gln	Arg
		340					345						350		
Asn	Arg	Val	Thr	His	Ile	Leu	Asn	Met	Ala	Arg	Glu	Ile	Asp	Asn	Phe
		355				360						365			
Tyr	Pro	Glu	Arg	Phe	Thr	Tyr	His	Asn	Val	Arg	Leu	Trp	Asp	Glu	Glu
370					375						380				
Ser	Ala	Gln	Leu	Leu	Pro	His	Trp	Lys	Glu	Thr	His	Arg	Phe	Ile	Glu

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385          390          395          400
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly
          405          410          415
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr
          420          425          430
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro
          435          440          445
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln
          450          455          460
Gly Ile Leu Thr Ala Ser Arg Gln Ser His Val Trp Glu Gln Lys Val
          465          470          475          480
Gly Gly Val Ser Pro Glu Glu His Pro Ala Pro Glu Val Ser Thr Pro
          485          490          495
Phe Pro Pro Leu Pro Pro Glu Pro Glu Gly Gly Glu Glu Lys Val
          500          505          510
Val Gly Met Glu Glu Ser Gln Ala Ala Pro Lys Glu Glu Pro Gly Pro
          515          520          525
Arg Pro Arg Ile Asn Leu Arg Gly Val Met Arg Ser Ile Ser Leu Leu
          530          535          540
Glu Pro Ser Leu Glu Leu Glu Ser Thr Ser Glu Thr Ser Asp Met Pro
          545          550          555          560
Glu Val Phe Ser Ser His Glu Ser Ser His Glu Glu Pro Leu Gln Pro
          565          570          575
Phe Pro Gln Leu Ala Arg Thr Lys Gly Gly Gln Gln Val Asp Arg Gly
          580          585          590
Pro Gln Pro Ala Leu Lys Ser Arg Gln Ser Val Val Thr Leu Gln Gly
          595          600          605
Ser Ala Val Val Ala Asn Arg Thr Gln Ala Phe Gln Glu Gln Glu Gln
          610          615          620
Gly Gln Gly Gln Gly Gln Gly Glu Pro Cys Ile Ser Ser Thr Pro Arg
          625          630          635          640
Phe Arg Lys Val Val Arg Gln Ala Ser Val His Asp Ser Gly Glu Glu
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Gly Glu Ala

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<210> 3
<211> 156
<212> PRT
<213> Homo sapiens

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  20          25          30
Val Leu Glu Glu Phe Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn
  35          40          45
Leu Pro Asn Leu Phe Glu Asn Ala Gly Glu Phe Lys Tyr Lys Gln Ile
  50          55          60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu
  65          70          75          80
Ala Ile Ser Phe Ile Asp Glu Ala Arg Gly Lys Asn Cys Gly Val Leu
  85          90          95
Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala
  100          105          110

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Tyr Leu Met Gln Lys Leu Asn Leu Ser Met Asn Asp Ala Tyr Asp Ile
    115                120                125
Val Lys Met Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
    130                135                140
Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
    145                150                155

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<210> 4
<211> 156
<212> PRT
<213> Homo sapiens

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<400> 4
Asp Gly Ser Pro Val Pro Ser Ser Gln Pro Ala Phe Pro Val Gln Ile
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Leu Pro Tyr Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp
    20          25          30
Val Leu Gly Lys Tyr Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn
    35          40          45
Leu Pro Asn Ala Phe Glu His Gly Gly Glu Phe Thr Tyr Lys Gln Ile
    50          55          60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu
    65          70          75          80
Ala Ile Ser Phe Ile Asp Glu Ala Arg Ser Lys Lys Cys Gly Val Leu
    85          90          95
Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala
    100         105         110
Tyr Leu Met Gln Lys Met Asn Leu Ser Leu Asn Asp Ala Tyr Asp Phe
    115         120         125
Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
    130         135         140
Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
    145         150         155

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<210> 5
<211> 156
<212> PRT
<213> Homo sapiens

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<400> 5
Ala Thr Pro Pro Pro Val Gly Leu Arg Ala Ser Phe Pro Val Gln Ile
  1          5          10          15
Leu Pro Asn Leu Tyr Leu Gly Ser Ala Arg Asp Ser Ala Asn Leu Glu
    20          25          30
Ser Leu Ala Lys Leu Gly Ile Arg Tyr Ile Leu Asn Val Thr Pro Asn
    35          40          45
Leu Pro Asn Phe Phe Glu Lys Asn Gly Asp Phe His Tyr Lys Gln Ile
    50          55          60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Arg Phe Phe Pro Glu
    65          70          75          80
Ala Ile Glu Phe Ile Asp Glu Ala Leu Ser Gln Asn Cys Gly Val Leu
    85          90          95
Val His Cys Leu Ala Gly Val Ser Arg Ser Val Thr Val Thr Val Ala
    100         105         110
Tyr Leu Met Gln Lys Leu His Leu Ser Leu Asn Asp Ala Tyr Asp Leu

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		115					120				125						
Val	Lys	Arg	Lys	Lys	Ser	Asn	Ile	Ser	Pro	Asn	Phe	Asn	Phe	Met	Gly		
	130					135					140						
Gln	Leu	Leu	Asp	Phe	Glu	Arg	Ser	Leu	Arg	Leu	Glu						
145					150					155							

<210> 6
 <211> 155
 <212> PRT
 <213> Homo sapiens

<400> 6

Leu	Ser	Gln	Pro	Cys	Leu	Pro	Val	Pro	Ser	Val	Gly	Leu	Thr	Arg	Ile		
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Leu	Pro	His	Leu	Tyr	Leu	Gly	Ser	Gln	Lys	Asp	Val	Leu	Asn	Lys	Asp		
			20					25					30				
Leu	Met	Thr	Gln	Asn	Gly	Ile	Ser	Tyr	Val	Leu	Asn	Ala	Ser	Asn	Ser		
		35					40					45					
Cys	Pro	Lys	Pro	Asp	Phe	Ile	Cys	Glu	Ser	Arg	Phe	Met	Arg	Val	Pro		
	50					55					60						
Ile	Asn	Asp	Asn	Tyr	Cys	Glu	Lys	Leu	Leu	Pro	Trp	Leu	Asp	Lys	Ser		
65					70					75					80		
Ile	Glu	Phe	Ile	Asp	Lys	Ala	Lys	Leu	Ser	Ser	Cys	Gln	Val	Ile	Val		
				85				90						95			
His	Cys	Leu	Ala	Gly	Ile	Ser	Arg	Ser	Ala	Thr	Ile	Ala	Ile	Ala	Tyr		
			100					105					110				
Ile	Met	Lys	Thr	Met	Gly	Met	Ser	Ser	Asp	Asp	Ala	Tyr	Arg	Phe	Val		
		115					120					125					
Lys	Asp	Arg	Arg	Pro	Ser	Ile	Ser	Pro	Asn	Phe	Asn	Phe	Leu	Gly	Gln		
	130					135					140						
Leu	Leu	Glu	Tyr	Glu	Arg	Thr	Leu	Lys	Leu	Leu							
145					150					155							

<210> 7
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 7

Ser	Asp	Pro	Arg	Val	Pro	Ile	Tyr	Asp	Gln	Gly	Gly	Pro	Val	Glu	Ile		
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Leu	Pro	Tyr	Leu	Tyr	Leu	Gly	Ser	Cys	Asn	His	Ser	Ser	Asp	Leu	Gln		
			20					25					30				
Gly	Leu	Gln	Ala	Cys	Gly	Ile	Thr	Ala	Val	Leu	Asn	Val	Ser	Ala	Ser		
		35					40					45					
Cys	Pro	Asn	His	Phe	Glu	Gly	Leu	Phe	His	Tyr	Lys	Ser	Ile	Pro	Val		
	50					55					60						
Glu	Asp	Asn	Gln	Met	Val	Glu	Ile	Ser	Ala	Trp	Phe	Gln	Glu	Ala	Ile		
65					70					75					80		
Ser	Phe	Ile	Asp	Ser	Val	Lys	Asn	Ser	Gly	Gly	Arg	Val	Leu	Val	His		
				85				90						95			
Cys	Gln	Ala	Gly	Ile	Ser	Arg	Ser	Ala	Thr	Ile	Cys	Leu	Ala	Tyr	Leu		
		100					105						110				
Ile	Gln	Ser	His	Arg	Val	Arg	Leu	Asp	Glu	Ala	Phe	Asp	Phe	Val	Lys		
		115					120					125					

Gln Arg Arg Gly Val Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
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 Leu Gln Leu Glu Thr Gln Val Leu Cys His
 145 150

<210> 8
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 8
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 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Arg Lys Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Ile Asn Val Ser Ala Asn
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Ser Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Asn Glu Ala Ile
 65 70 75 80
 Asp Phe Ile Asp Ser Ile Lys Asn Ala Gly Gly Arg Val Phe Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Arg Thr Asn Arg Val Lys Leu Asp Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Phe Glu Ser Gln Val Leu Ala Pro
 145 150

<210> 9
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 9
 Ser Ser Cys Gly Thr Pro Leu His Asp Gln Gly Gly Pro Val Glu Ile
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 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ala Arg Arg Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Leu Asn Val Ser Ser Asp
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Cys Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Met Glu Ala Ile
 65 70 75 80
 Glu Tyr Ile Asp Ala Val Lys Asp Cys Arg Gly Arg Val Leu Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Met Lys Lys Arg Val Arg Leu Glu Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu

130 135 140
 Leu Gln Phe Glu Ser Gln Val Leu Ala Thr
 145 150

<210> 10
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 10
 Asn Val Ser Tyr Arg Pro Ala Tyr Asp Gln Gly Gly Pro Val Glu Ile
 1 5 10 15
 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Lys Cys Glu
 20 25 30
 Phe Leu Ala Asn Leu His Ile Thr Ala Leu Leu Asn Val Ser Arg Arg
 35 40 45
 Thr Ser Glu Ala Cys Met Thr His Leu His Tyr Lys Trp Ile Pro Val
 50 55 60
 Glu Asp Ser His Thr Ala Asp Ile Ser Ser His Phe Gln Glu Ala Ile
 65 70 75 80
 Asp Phe Ile Asp Cys Val Arg Glu Lys Gly Gly Lys Val Leu Val His
 85 90 95
 Cys Glu Ala Gly Ile Ser Arg Ser Pro Thr Ile Cys Met Ala Tyr Leu
 100 105 110
 Met Lys Thr Lys Gln Phe Arg Leu Lys Glu Ala Phe Asp Tyr Ile Lys
 115 120 125
 Gln Arg Arg Ser Met Val Ser Pro Asn Phe Gly Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Tyr Glu Ser Glu Ile Leu Pro Ser
 145 150

<210> 11
 <211> 163
 <212> PRT
 <213> Homo sapiens

<400> 11
 Asp Gly Ser Gly Cys Tyr Ser Leu Pro Ser Gln Pro Cys Asn Glu Val
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 Thr Pro Arg Ile Tyr Val Gly Asn Ala Ser Val Ala Gln Asp Ile Pro
 20 25 30
 Lys Leu Gln Lys Leu Gly Ile Thr His Val Leu Asn Ala Ala Glu Gly
 35 40 45
 Arg Ser Phe Met His Val Asn Thr Asn Ala Asn Phe Tyr Lys Asp Ser
 50 55 60
 Gly Ile Thr Tyr Leu Gly Ile Lys Ala Asn Asp Thr Gln Glu Phe Asn
 65 70 75 80
 Leu Ser Ala Tyr Phe Glu Arg Ala Ala Asp Phe Ile Asp Gln Ala Leu
 85 90 95
 Ala Gln Lys Asn Gly Arg Val Leu Val His Cys Arg Glu Gly Tyr Ser
 100 105 110
 Arg Ser Pro Thr Leu Val Ile Ala Tyr Leu Met Met Arg Gln Lys Met
 115 120 125
 Asp Val Lys Ser Ala Leu Ser Ile Val Arg Gln Asn Arg Glu Ile Gly
 130 135 140

Pro Asn Asp Gly Phe Leu Ala Gln Leu Cys Gln Leu Asn Asp Arg Leu
 145 150 155 160
 Ala Lys Glu

<210> 12
 <211> 140
 <212> PRT
 <213> Homo sapiens

<400> 12
 Met Glu Gly Thr Met Met Met Gln Gln Arg Pro Val Leu Ser Gln Gln
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 20 25 30
 Arg Glu Ile Asp Asn Phe Tyr Pro Glu Arg Phe Thr Tyr His Asn Val
 35 40 45
 Arg Leu Trp Asp Glu Glu Ser Ala Gln Leu Leu Pro His Trp Lys Glu
 50 55 60
 Thr His Arg Phe Ile Glu Ala Ala Arg Ala Gln Gly Thr His Val Leu
 65 70 75 80
 Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val Leu Ala
 85 90 95
 Tyr Ala Met Lys Gln Tyr Glu Cys Ser Leu Glu Gln Ala Leu Arg His
 100 105 110
 Val Gln Glu Leu Arg Pro Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg
 115 120 125
 Gln Leu Gln Ile Tyr Gln Gly Ile Leu Thr Ala Arg
 130 135 140

<210> 13
 <211> 737
 <212> PRT
 <213> Drosophila melanogaster

<400> 13
 Gln Ser Glu Arg Arg Leu Ser Thr Asp Ser Thr Arg Ser Ser Asn Ser
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 Thr Gln Ser Asn Asn Ser Asp Ile Gln Leu His Leu Gln Ser Met Phe
 20 25 30
 Tyr Leu Leu Gln Arg Glu Asp Thr Leu Lys Met Ala Val Lys Leu Glu
 35 40 45
 Ser Gln Arg Ser Asn Arg Thr Arg Tyr Leu Val Ile Ala Ser Arg Ser
 50 55 60
 Cys Cys Arg Ser Gly Thr Ser Asp Arg Arg Arg His Arg Ile Met Arg
 65 70 75 80
 His His Ser Val Lys Val Gly Gly Ser Ala Gly Thr Lys Ser Ser Thr
 85 90 95
 Ser Pro Ala Val Pro Thr Gln Arg Gln Leu Ser Val Glu Gln Thr Ala
 100 105 110
 Thr Glu Ala Ser Ser Lys Cys Asp Lys Thr Ala Asp Lys Glu Asn Ala
 115 120 125
 Thr Ala Ala Gly Asp Asn Lys Asn Thr Ser Gly Met Glu Glu Ser Cys
 130 135 140
 Leu Leu Gly Ile Asp Cys Asn Glu Arg Thr Thr Ile Gly Leu Val Val

145	Pro	Ile	Leu	Ala	Asp	Thr	Thr	Ile	His	Leu	Asp	Gly	Asp	Gly	Gly	Phe
					165					170						175
Ser	Val	Lys	Val	Tyr	Glu	Lys	Thr	His	Ile	Phe	Lys	Pro	Val	Ser	Val	
					180					185						190
Gln	Ala	Met	Trp	Ser	Ala	Leu	Gln	Thr	Leu	His	Lys	Val	Ser	Lys	Lys	
					195					200						205
Ala	Arg	Glu	Asn	Asn	Phe	Tyr	Ala	Ser	Gly	Pro	Ser	His	Asp	Trp	Leu	
					210					215						220
Ser	Ser	Tyr	Glu	Arg	Arg	Ile	Glu	Ser	Asp	Gln	Ser	Cys	Leu	Asn	Glu	
					225					230						235
Trp	Asn	Ala	Met	Asp	Ala	Leu	Glu	Ser	Arg	Arg	Pro	Pro	Ser	Pro	Asp	
					245					250						255
Ala	Ile	Arg	Asn	Lys	Pro	Pro	Glu	Lys	Glu	Glu	Thr	Glu	Ser	Val	Ile	
					260					265						270
Lys	Met	Lys	Leu	Lys	Ala	Ile	Met	Ser	Val	Asp	Leu	Asp	Glu	Val		
					275					280						285
Thr	Ser	Lys	Tyr	Ile	Arg	Gly	Arg	Leu	Glu	Glu	Ile	Leu	Asp	Met	Asp	
					290					295						300
Leu	Gly	Glu	Tyr	Lys	Ser	Phe	Ile	Asp	Ala	Glu	Met	Leu	Val	Ile	Leu	
					305					310						315
Gly	Gln	Met	Asp	Ala	Pro	Thr	Lys	Ile	Phe	Glu	His	Val	Tyr	Leu	Gly	
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Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Glu	Leu	Gln	Lys	Asn	Gly	Val	
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Arg	His	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp	Asn	Phe	Phe	Pro	Gly	
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Thr	Phe	Glu	Tyr	Phe	Asn	Val	Arg	Val	Tyr	Asp	Asp	Glu	Lys	Thr	Asn	
					370					375						380
Leu	Leu	Lys	Tyr	Trp	Asp	Asp	Thr	Phe	Arg	Tyr	Ile	Thr	Arg	Ala	Lys	
					385					390						395
Ala	Glu	Gly	Ser	Lys	Val	Leu	Val	His	Cys	Lys	Met	Gly	Val	Ser	Arg	
					405					410						415
Ser	Ala	Ser	Val	Val	Ile	Ala	Tyr	Ala	Met	Lys	Ala	Tyr	Gln	Trp	Glu	
					420					425						430
Phe	Gln	Gln	Ala	Leu	Glu	His	Val	Lys	Lys	Arg	Arg	Ser	Cys	Ile	Lys	
					435					440						445
Pro	Asn	Lys	Asn	Phe	Leu	Asn	Gln	Leu	Glu	Thr	Tyr	Ser	Gly	Met	Leu	
					450					455						460
Asp	Ala	Met	Lys	Asn	Lys	Glu	Lys	Leu	Gln	Arg	Ser	Lys	Ser	Glu	Thr	
					465					470						475
Asn	Leu	Lys	Ser	Thr	Lys	Asp	Ala	Arg	Leu	Leu	Pro	Gly	Ser	Glu	Pro	
					485					490						495
Thr	Pro	Leu	Ile	Gln	Ala	Leu	Asn	Gln	Ala	Lys	Ser	Lys	Ser	Thr	Gly	
					500					505						510
Glu	Ala	Gly	Val	Thr	Pro	Asp	Gly	Glu	Glu	Glu	Asp	Gly	Ser	Arg	Met	
					515					520						525
His	Arg	Arg	Ser	Ile	Ala	Gln	Lys	Ser	Gln	Arg	Arg	Met	Val	Arg	Arg	
					530					535						540
Ser	Ser	Ser	Thr	Ser	Pro	Lys	Thr	Gln	Thr	Ala	Val	Val	Thr	Lys	Gln	
					545					550						555
Gln	Ser	Gln	Ser	Met	Glu	Asn	Leu	Thr	Pro	Glu	Arg	Ser	Val	Ala	Glu	
					565					570						575
Glu	Pro	Lys	Asn	Met	Arg	Phe	Pro	Gly	Ser	Asn	Gly	Glu	Asn	Tyr	Ser	
					580					585						590
Val	Thr	Gln	Asn	Gln	Val	Leu	His	Ile	Gln	Lys	His	Thr	Pro	Leu	Ser	
					595					600						605

```

Val Arg Thr Arg Ile His Asp Leu Glu Ala His Arg Ala Asp Gln Leu
610                               615                               620
Pro Gln Gln Pro Val Trp Thr Ser Leu Thr Lys Leu Ile Thr Gln Thr
625                               630                               635                               640
Ser His Leu Gly Lys Ser Val Ser Gly Ser Ser Ser Gly Asn Ile Asp
645                               650                               655
Ser Arg Arg Asp Ser Ser Cys Ser Asp Val Phe Ser Ser Gln Val Asp
660                               665                               670
Ser Val Phe Ala Lys Asp Glu Gly Glu Lys Arg Gln Arg Arg Lys Thr
675                               680                               685
His Ser Trp Thr Glu Ser Leu Gly Pro Ser Gly Gly Ile Val Leu Asp
690                               695                               700
Pro Thr Pro Gln Gln Gln Lys Gln Gln Ser Asn Ala Ile Leu Arg Pro
705                               710                               715                               720
Arg Gly Thr Arg Gln Arg Glu Leu Pro Ser Arg His Ala Ser Trp Gly
725                               730                               735
Ser

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<210> 14
<211> 509
<212> PRT
<213> Homo sapiens

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<400> 14

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Met Thr Leu Ser Thr Leu Ala Arg Lys Arg Lys Ala Pro Leu Ala Cys
1                               5                               10                               15
Thr Cys Ser Leu Gly Gly Pro Asp Met Ile Pro Tyr Phe Ser Ala Asn
20                               25                               30
Ala Val Ile Ser Gln Asn Ala Ile Asn Gln Leu Ile Ser Glu Ser Phe
35                               40                               45
Leu Thr Val Lys Gly Ala Ala Leu Phe Leu Pro Arg Gly Asn Gly Ser
50                               55                               60
Ser Thr Pro Arg Ile Ser His Arg Arg Asn Lys His Ala Gly Asp Leu
65                               70                               75                               80
Gln Gln His Leu Gln Ala Met Phe Ile Leu Leu Arg Pro Glu Asp Asn
85                               90                               95
Ile Arg Leu Ala Val Arg Leu Glu Ser Thr Tyr Gln Asn Arg Thr Arg
100                              105                              110
Tyr Met Val Val Val Ser Thr Asn Gly Arg Gln Asp Thr Glu Glu Ser
115                              120                              125
Ile Val Leu Gly Met Asp Phe Ser Ser Asn Asp Ser Ser Thr Cys Thr
130                              135                              140
Met Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Leu Ile His Leu Asp
145                              150                              155                              160
Gly Asp Gly Gly Phe Ser Val Ser Thr Asp Asn Arg Val His Ile Phe
165                              170                              175
Lys Pro Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Ser Leu His
180                              185                              190
Lys Ala Cys Glu Val Ala Arg Ala His Asn Tyr Tyr Pro Gly Ser Leu
195                              200                              205
Phe Leu Thr Trp Val Ser Tyr Tyr Glu Ser His Ile Asn Ser Asp Gln
210                              215                              220
Ser Ser Val Asn Glu Trp Asn Ala Met Gln Asp Val Gln Ser His Arg
225                              230                              235                              240
Pro Asp Ser Pro Ala Leu Phe Thr Asp Ile Pro Thr Glu Arg Glu Arg

```

Thr	Glu	Arg	Leu	Ile	Lys	Thr	Lys	Leu	Arg	Glu	Ile	Met	Met	Gln	Lys
			245					250						255	
Asp	Leu	Glu	Asn	Ile	Thr	Ser	Lys	Glu	Ile	Arg	Thr	Glu	Leu	Glu	Met
		260						265					270		
Gln	Met	Val	Cys	Asn	Leu	Arg	Glu	Phe	Lys	Glu	Phe	Ile	Asp	Asn	Glu
		275						280					285		
Met	Ile	Val	Ile	Leu	Gly	Gln	Met	Asp	Ser	Pro	Thr	Gln	Ile	Phe	Glu
305					310					315					320
His	Val	Phe	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Asp	Leu
			325						330					335	
Gln	Asn	Arg	Gly	Val	Arg	Tyr	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp
			340					345					350		
Asn	Phe	Phe	Pro	Gly	Val	Phe	Glu	Tyr	His	Asn	Ile	Arg	Val	Tyr	Asp
		355						360					365		
Glu	Glu	Ala	Thr	Asp	Leu	Leu	Ala	Tyr	Trp	Asn	Asp	Thr	Tyr	Lys	Phe
		370					375					380			
Ile	Ser	Lys	Ala	Lys	Lys	His	Gly	Ser	Lys	Cys	Leu	Val	His	Cys	Lys
385					390					395					400
Met	Gly	Val	Ser	Arg	Ser	Ala	Ser	Thr	Val	Ile	Ala	Tyr	Ala	Met	Lys
			405						410					415	
Glu	Tyr	Gly	Trp	Asn	Leu	Asp	Arg	Ala	Tyr	Asp	Tyr	Val	Lys	Glu	Arg
			420						425					430	
Arg	Thr	Val	Thr	Lys	Pro	Asn	Pro	Ser	Phe	Met	Arg	Gln	Leu	Glu	Glu
		435					440						445		
Tyr	Gln	Gly	Ile	Leu	Leu	Ala	Ser	Phe	Leu	Gly	Leu	Ile	His	Gly	Gly
		450				455					460				
Arg	Asp	Lys	Pro	Trp	Gly	Glu	Lys	Ser	Thr	Glu	Phe	Glu	Ser	Val	Asp
465					470					475					480
Leu	Val	Ser	Ile	Pro	Gly	Ser	Pro	Ser	Cys	Cys	Asn	Pro	Glu	Lys	Leu
			485						490					495	
Leu	His	Ile	Ser	His	Pro	Tyr	Leu	Thr	Pro	Ser	Ile	Lys			
			500					505							

<210> 15
 <211> 552
 <212> PRT
 <213> Homo sapiens

Met	Val	Leu	Arg	Leu	Trp	Ser	Asp	Thr	Lys	Ile	His	Leu	Asp	Gly	Asp
1				5					10					15	
Gly	Gly	Phe	Ser	Val	Ser	Thr	Ala	Gly	Arg	Met	His	Ile	Phe	Lys	Pro
			20					25					30		
Val	Ser	Val	Gln	Ala	Met	Trp	Ser	Ala	Leu	Gln	Val	Leu	His	Lys	Ala
		35					40						45		
Cys	Glu	Val	Ala	Arg	Arg	His	Asn	Tyr	Phe	Pro	Gly	Gly	Val	Ala	Leu
		50				55				60					
Ile	Trp	Ala	Thr	Tyr	Tyr	Glu	Ser	Cys	Ile	Ser	Ser	Glu	Gln	Ser	Cys
65					70					75					80
Ile	Asn	Glu	Trp	Asn	Ala	Met	Gln	Asp	Leu	Glu	Ser	Thr	Arg	Pro	Asp
			85						90					95	
Ser	Pro	Ala	Leu	Phe	Val	Asp	Lys	Pro	Thr	Glu	Gly	Glu	Arg	Thr	Glu
		100						105					110		
Arg	Leu	Ile	Lys	Ala	Lys	Leu	Arg	Ser	Ile	Met	Met	Ser	Gln	Asp	Leu
		115					120						125		

Glu	Asn	Val	Thr	Ser	Lys	Glu	Ile	Arg	Asn	Glu	Leu	Glu	Lys	Gln	Met
130						135				140					
Asn	Cys	Asn	Leu	Lys	Glu	Leu	Lys	Glu	Phe	Ile	Asp	Asn	Glu	Met	Leu
145					150				155						160
Leu	Ile	Leu	Gly	Gln	Met	Asp	Lys	Pro	Ser	Leu	Ile	Phe	Asp	His	Leu
			165						170					175	
Tyr	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Glu	Leu	Gln	Gly
		180						185					190		
Ser	Gly	Val	Asp	Tyr	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp	Asn	Phe
	195						200					205			
Phe	Pro	Gly	Leu	Phe	Ala	Tyr	His	Asn	Ile	Arg	Val	Tyr	Asp	Glu	Glu
210						215					220				
Thr	Thr	Asp	Leu	Leu	Ala	His	Trp	Asn	Glu	Ala	Tyr	His	Phe	Ile	Asn
225					230					235					240
Lys	Ala	Lys	Arg	Asn	His	Ser	Lys	Cys	Leu	Val	His	Cys	Lys	Met	Gly
			245						250					255	
Val	Ser	Arg	Ser	Ala	Ser	Thr	Val	Ile	Ala	Tyr	Ala	Met	Lys	Glu	Phe
			260					265					270		
Gly	Trp	Pro	Leu	Glu	Lys	Ala	Tyr	Asn	Tyr	Val	Lys	Gln	Lys	Arg	Ser
		275						280				285			
Ile	Thr	Arg	Pro	Asn	Ala	Gly	Phe	Met	Arg	Gln	Leu	Ser	Glu	Tyr	Glu
290						295					300				
Gly	Ile	Leu	Asp	Ala	Ser	Lys	Gln	Arg	His	Asn	Lys	Leu	Trp	Arg	Gln
305					310					315					320
Gln	Thr	Asp	Ser	Ser	Leu	Gln	Gln	Pro	Val	Asp	Asp	Pro	Ala	Gly	Pro
			325						330					335	
Gly	Asp	Phe	Leu	Pro	Glu	Thr	Pro	Asp	Gly	Thr	Pro	Glu	Ser	Gln	Leu
			340					345					350		
Pro	Phe	Leu	Asp	Asp	Ala	Ala	Gln	Pro	Gly	Leu	Gly	Pro	Pro	Leu	Pro
		355					360					365			
Cys	Cys	Phe	Arg	Arg	Leu	Ser	Asp	Pro	Leu	Leu	Pro	Ser	Pro	Glu	Asp
370						375					380				
Glu	Thr	Gly	Ser	Leu	Val	His	Leu	Glu	Asp	Pro	Glu	Arg	Glu	Ala	Leu
385				390					395						400
Leu	Glu	Glu	Ala	Ala	Pro	Pro	Ala	Glu	Val	His	Arg	Pro	Ala	Arg	Gln
			405						410					415	
Pro	Gln	Gln	Gly	Ser	Gly	Leu	Cys	Glu	Lys	Asp	Val	Lys	Lys	Lys	Leu
			420					425					430		
Glu	Phe	Gly	Ser	Pro	Lys	Gly	Arg	Ser	Gly	Ser	Leu	Leu	Gln	Val	Glu
		435					440					445			
Glu	Thr	Glu	Arg	Glu	Glu	Gly	Leu	Gly	Ala	Gly	Arg	Trp	Gly	Gln	Leu
450					455						460				
Pro	Thr	Gln	Leu	Asp	Gln	Asn	Leu	Leu	Asn	Ser	Glu	Asn	Leu	Asn	Asn
465					470					475					480
Asn	Ser	Lys	Arg	Ser	Cys	Pro	Asn	Gly	Met	Glu	Val	Gly	Arg	Ala	Arg
			485						490					495	
Pro	Ala	Gly	Trp	His	Thr	Pro	Ser	Leu	Pro	Ser	His	Ser	Asn	Trp	Pro
		500						505					510		
Thr	Ser	Ala	Ser	Val	Val	Gly	Thr	Gly	Thr	Arg	His	His	Thr	Gln	
		515					520				525				
Leu	Ile	Phe	Phe	Tyr	Cys	Leu	Leu	Trp	Ala	Pro	Ser	Ser	His	Leu	Gln
530					535						540				
Gly	Pro	Glu	Gly	Ser	Phe	Thr	Gly								
545					550										

<211> 10
 <212> PRT
 <213> Homo sapiens

<400> 16
 Val His Cys Lys Met Gly Val Ser Arg Ser
 1 5 10

<210> 17
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Conserved homology region from eight DSPs having
 MAP-kinase phosphatase activity

<400> 17
 Asn Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Gly
 1 5 10 15
 Thr Asn Ile Leu Ala Tyr Leu Met
 20

<210> 18
 <211> 22
 <212> PRT
 <213> Homo sapiens

<400> 18
 Val Leu Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val
 1 5 10 15
 Leu Ala Tyr Ala Met Lys
 20

<210> 19
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 19
 tgtc gatgaa gtcacggtac tgctggaggg 30

<210> 20
 <211> 1416
 <212> DNA
 <213> Mus musculus

<400> 20
 atggccctgg tcacagtgg ccgttcgccc ccgggcagcg gcgcctccac gcccgtaggg 60
 ccctgggacc aggcgggtcca gcgaaggagt cgactccagc gaaggcagag ctttgcggtg 120
 ctccgtgggg ctgtcctggg actgcaggat ggaggggaca atgatgatgc agcagaggcc 180

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agttctgagc caacagagaa ggccccgagt gaggaggagc tccacgggga ccagacagac 240
ttcgggcaag gatcccagag tccccagaag caggaggagc agaggcagca cctgcacctc 300
atggtacagc tgctgaggcc gcaggatgac atccgcctgg cagcccagct ggaggcaccc 360
cggcctcccc ggctccgcta cctgctggta gtttctacac gagaaggaga aggtctgagc 420
caggatgaga cggctctcct gggcgtggat ttccctgaca gcagctcccc cagctgcacc 480
ctgggcctgg tcttgcccct ctggagtgc acccaggtgt acttagatgg agacgggggc 540
ttcagcgtga cgtctggtgg gcaaagccgg atcttcaagc ccatctccat ccagaccatg 600
tgggccacac tccaggtatt gcaccaagca tgtgaggcag ctctaggcag cggccttgta 660
ccgggtggca gtgcctcac ctgggccagc cactaccagg agagactgaa ctccgaacag 720
agctgcctca atgagtggac ggctatggcc gacctggagt ctctgcggcc tcccagcgcc 780
gagcctggcg ggtcctcaga acaggagcag atggagcagg cgatccgtgc tgagctgtgg 840
aaagtgttgg atgtcagtga cctggagagt gtcacttcca aagagatccg ccaggctctg 900
gagctgcgcc tggggctccc cctccagcag taccgtgact tcatcgacaa ccagatgctg 960
ctgctggtgg cacagcggga ccgagcctcc cgcacttcc cccacctcta cctgggctca 1020
gagtgaacg cagcaaacct ggaggagctg cagaggaaca gggtcaccca catcttgaac 1080
atggcccggg agattgacaa cttctaccct gagcgcttca cctaccacaa tgtgcgctc 1140
tgggatgagg agtcggccca gctgctgccg cactggaagg agacgcaccg cttcattgag 1200
gctgcaagag cacagggcac ccacgtgctg gtccactgca agatgggcgt cagccgctca 1260
gcggccacag tgctggccta tgccatgaag cagtacgaat gcagcctgga gcaggccctg 1320
cgccacgtgc aggagctccg gcccatcgcc cgccccaacc ctggcttctt gcgccagctg 1380
cagatctacc agggcatcct gacggccaga acctga 1416

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<210> 21

<211> 471

<212> PRT

<213> Mus musculus

<400> 21

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Met Ala Leu Val Thr Val Ser Arg Ser Pro Pro Gly Ser Gly Ala Ser
 1          5          10          15
Thr Pro Val Gly Pro Trp Asp Gln Ala Val Gln Arg Arg Ser Arg Leu
          20          25          30
Gln Arg Arg Gln Ser Phe Ala Val Leu Arg Gly Ala Val Leu Gly Leu
          35          40          45
Gln Asp Gly Gly Asp Asn Asp Asp Ala Ala Glu Ala Ser Ser Glu Pro
          50          55          60
Thr Glu Lys Ala Pro Ser Glu Glu Glu Leu His Gly Asp Gln Thr Asp
          65          70          75          80
Phe Gly Gln Gly Ser Gln Ser Pro Gln Lys Gln Glu Glu Gln Arg Gln
          85          90          95
His Leu His Leu Met Val Gln Leu Leu Arg Pro Gln Asp Asp Ile Arg
          100          105          110
Leu Ala Ala Gln Leu Glu Ala Pro Arg Pro Pro Arg Leu Arg Tyr Leu
          115          120          125
Leu Val Val Ser Thr Arg Glu Gly Glu Gly Leu Ser Gln Asp Glu Thr
          130          135          140
Val Leu Leu Gly Val Asp Phe Pro Asp Ser Ser Ser Pro Ser Cys Thr
          145          150          155          160
Leu Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Gln Val Tyr Leu Asp
          165          170          175
Gly Asp Gly Gly Phe Ser Val Thr Ser Gly Gly Gln Ser Arg Ile Phe
          180          185          190
Lys Pro Ile Ser Ile Gln Thr Met Trp Ala Thr Leu Gln Val Leu His
          195          200          205
Gln Ala Cys Glu Ala Ala Leu Gly Ser Gly Leu Val Pro Gly Gly Ser
          210          215          220
Ala Leu Thr Trp Ala Ser His Tyr Gln Glu Arg Leu Asn Ser Glu Gln

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225		230		235		240
Ser Cys Leu Asn Glu Trp Thr Ala Met Ala Asp Leu Glu Ser Leu Arg						
		245		250		255
Pro Pro Ser Ala Glu Pro Gly Gly Ser Ser Glu Gln Glu Gln Met Glu						
		260		265		270
Gln Ala Ile Arg Ala Glu Leu Trp Lys Val Leu Asp Val Ser Asp Leu						
		275		280		285
Glu Ser Val Thr Ser Lys Glu Ile Arg Gln Ala Leu Glu Leu Arg Leu						
		290		295		300
Gly Leu Pro Leu Gln Gln Tyr Arg Asp Phe Ile Asp Asn Gln Met Leu						
		305		310		315
Leu Leu Val Ala Gln Arg Asp Arg Ala Ser Arg Ile Phe Pro His Leu						
		325		330		335
Tyr Leu Gly Ser Glu Trp Asn Ala Ala Asn Leu Glu Glu Leu Gln Arg						
		340		345		350
Asn Arg Val Thr His Ile Leu Asn Met Ala Arg Glu Ile Asp Asn Phe						
		355		360		365
Tyr Pro Glu Arg Phe Thr Tyr His Asn Val Arg Leu Trp Asp Glu Glu						
		370		375		380
Ser Ala Gln Leu Leu Pro His Trp Lys Glu Thr His Arg Phe Ile Glu						
		385		390		395
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly						
		405		410		415
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr						
		420		425		430
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro						
		435		440		445
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln						
		450		455		460
Gly Ile Leu Thr Ala Arg Thr						
		465		470		

<210> 22
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 22
 gccgcactgg aaggagacgc accg

24

<210> 23
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 23
 gcgccagctg cagatctacc agggcat

27

<210> 24
 <211> 28

<212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 24
 cactttccac agctcagcac ggatcgcc

28

<210> 25
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 25
 cgagagact ccaggtcggc catagcc

27

<210> 26
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 26
 ggggttgagg gaaggggccg tgc

23

<210> 27
 <211> 6
 <212> PRT
 <213> Homo sapiens

<400> 27
 Asp Ala Asp Glu Tyr Leu
 1 5